

On the knowledge of the genus *Chamanthodon* Le Cerf, 1916 (Lepidoptera, Sesiidae, Osminiini) of Vietnam and adjacent countries

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Abstract Two species of the genus *Chamanthodon* Le Cerf, 1916, namely *C. melanoptera* Le Cerf, 1927 and *C. aurigera* (Bryk, 1947) are noted from Vietnam. The latter species is recorded from Vietnam and Thailand for the first time. Descriptions and illustrations of female *Chamanthodon*, including the genitalia, are presented for the first time. A new species, *C. bicincta* sp. nov. is described and figured from Myanmar.

Key words Lepidoptera, Sesiidae, *Chamanthodon*, new species, Oriental region, taxonomy.

This is a continuation of our investigations of Oriental Sesiidae. It deals with the genus *Chamanthodon* Le Cerf, 1916 of Vietnam and adjacent countries, Myanmar and Thailand. Recently, we have published a redescription of this genus, with a brief discussion of its composition and distribution (Arita & Gorbunov, 1998). Since that time, some additional material of the genus has been collected. Herein, we describe a new species, *C. bicincta* sp. nov., from Myanmar. Besides that, two species of the genus, namely *C. melanoptera* Le Cerf, 1927 and *C. aurigera* (Bryk, 1947) are noted from Vietnam. The latter one is recorded from Vietnam and Thailand for the first time. We describe and illustrate the female sex of *Chamanthodon*, including the genitalia, for the first time. As one can see from the pictures below (Figs 7–9), the genitalia of *C. aurigera* distinctly differ from those of two other species, noted herein. It is possible, that *C. aurigera* is a representative of another, yet undescribed genus of Osminiini. Unfortunately, we cannot solve this problem now because males of this species remain unknown.

All specimens examined or cited herein are kept in the following collections abbreviated in the text as follows:

COGM—collection of O. G. Gorbunov, Moscow, Russia.

MNHP—Muséum national d'histoire naturelle, Paris, France.

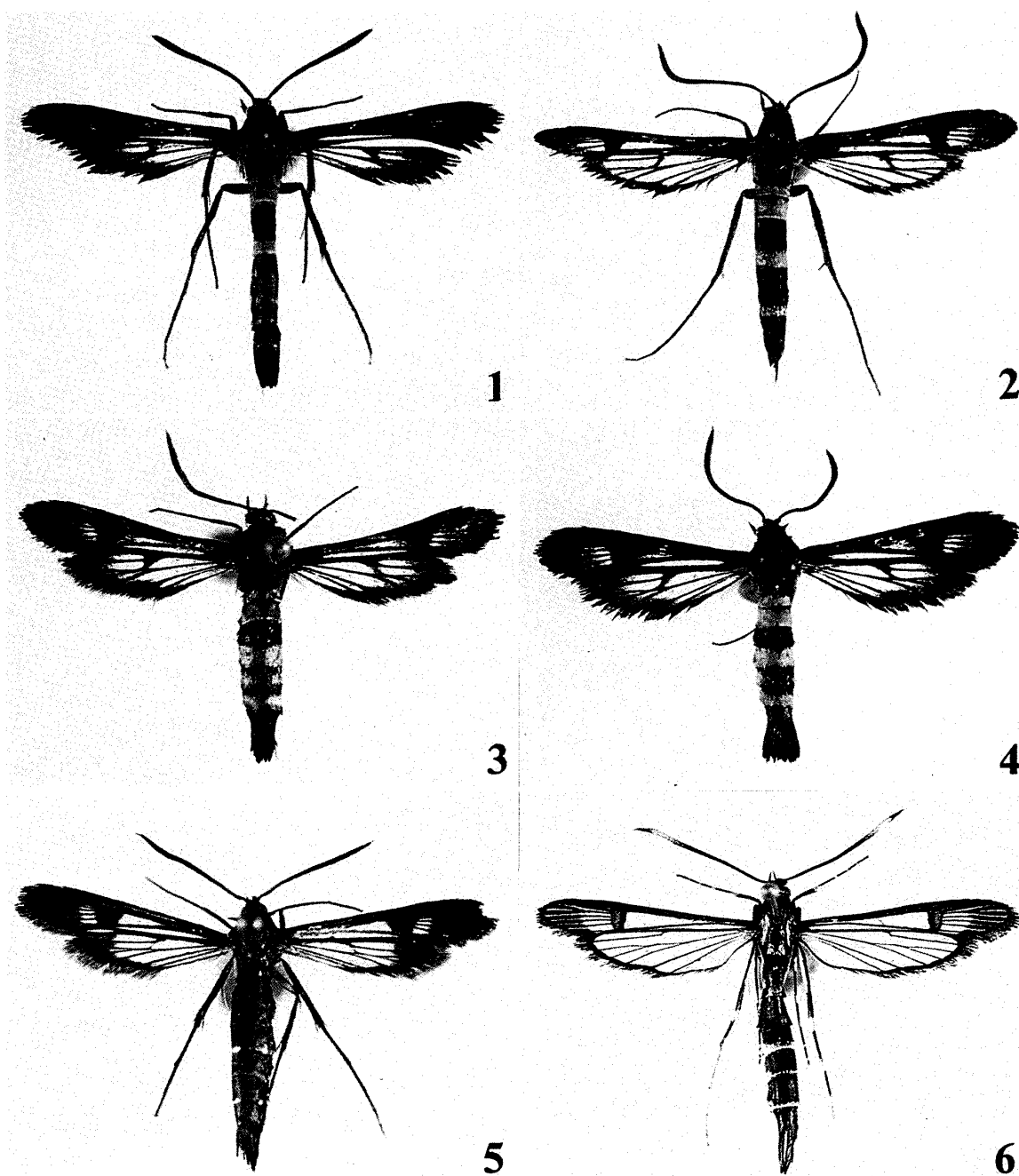
NSMT—Department of Zoology, National Science Museum, Tokyo, Japan.

RMS—Naturhistoriska Riksmuseet, Stockholm, Sweden.

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Chamanthodon melanoptera Le Cerf (Figs 1–4, 7)

Chamanthodon melanoptera Le Cerf, 1927: 149. Type locality: “Cho Ganh” [=N. Vietnam, Tonkin, Cho Ganh?]. Holotype ♂ (MNHP); Gaede, 1933: 782; Heppner & Duckworth, 1981: 41; Arita & Gorbunov, 1998: 25, figs 7–8, 12.



Figs 1-6. *Chamanthedon* spp. 1-4. *C. melanoptera* Le Cerf, 1927. 1. ♂ (NSMT). Alar expanse 18.1 mm. 2. ♀ (NSMT). Alar expanse 19.5 mm. 3. ♀ (NSMT). Alar expanse 18.6 mm. 4. ♀ (NSMT). Alar expanse 18.4 mm. 5. *C. bicincta* sp. nov., holotype ♀ (COGM). Alar expanse 18.8 mm. 6. *C. aurigera* (Bryk, 1947), ♀ (NSMT). Alar expanse 24.0 mm.

Description. Female (Fig. 2). Alar expanse 19.5 mm; body length 11.6 mm; forewing 9.0 mm; antenna 5.3 mm.

Head: antenna dark brown to black with dark green-blue sheen; scapus dark brown to black; frons dark brown with strong green-violet sheen; labial palpus dark brown to black with purple sheen; vertex black with green-violet sheen; occipital fringe dark brown to black.

Thorax: dorsally entirely dark brown to black with green sheen, with a tuft of ochreous hair-like scales on metathorax laterally; thorax laterally dark brown to black with green-blue sheen; posteriorly metepimeron and metameron dark brown with bronzed-purple sheen.

Legs: neck plate dark brown to black with strong green-blue sheen, with a few ochreous scales with purple-bronzed sheen; fore coxa ochreous to pale yellow with bronzed sheen, with dark brown margins with bronzed sheen; fore femur externally dark brown to black with green-blue sheen, internally brown with bronzed sheen; fore tibia dorsally dark brown with bronzed-purple sheen, with a few ochreous scales distally, ventrally ochreous with bronzed sheen; fore tarsus dorsally dark brown with bronzed sheen, ventrally ochreous with bronzed sheen; mid coxa dark brown to black with green-blue sheen; mid femur dark brown to black with bronzed-green sheen; mid tibia dark brown to black with bronzed-green sheen, with a few ochreous scales exterior-distally; spurs brown with bronzed sheen, mixed with ochreous scales with bronzed sheen; mid tarsus dorsally brown with bronzed sheen, ventrally ochreous with bronzed sheen; hind coxa dark brown to black with violet-blue sheen, with a small ochreous to pale yellow spot medially; hind femur externally ochreous to pale yellow with bronzed sheen, with dark brown to black posterior margin with blue-violet sheen, internally dark brown with bronzed sheen; hind tibia dark brown to black with purple sheen, with admixture of a few ochreous scales exterior-basally and exterior-distally; spurs brown with bronzed sheen, mixed with ochreous scales with bronzed sheen; hind tarsus entirely brown with bronzed sheen.

Abdomen: dorsally dark brown to black with strong dark green-blue sheen; tergites 1 and 2 each dark yellow with bronzed-purple sheen, with a narrow dark brown to black stripe with violet sheen anteriorly; tergite 4 with a broad dark yellow stripe broadened laterally, with bronzed-purple sheen distally; tergite 5 with a large dark yellow spot with bronzed-purple sheen laterally; tergite 6 with a narrow dark yellow stripe broadened laterally, with bronzed-purple sheen distally; ventrally sternite 1+2 dark yellow stripe with bronzed-purple sheen, with admixture of dark brown scales with purple-violet sheen basally; remaining sternites mixed with dark brown and pale orange scales with bronzed-purple sheen; anal tuft entirely dark brown to black with greenish sheen.

Forewing: costal margin dark brown to black with strong green-blue sheen; CuA-stem, anal margin, discal spot, veins within external transparent area and apical area dark brown to black with purple-violet sheen; discal spot broad, broadened costally; transparent areas rather poorly developed; external transparent area relatively small, rounded, divided into four cells; level to vein M_2 about as broad as discal spot and about twice as narrow as apical area; posterior transparent area reaching proximal margin of discal spot; cilia dark grey-brown with bronzed sheen.

Hindwing: transparent; veins and discal spot broadly dark brown to black with bronzed-purple sheen; discal spot reaching base of common stem M_3 -CuA₁; outer margin dark brown to black with bronzed-purple sheen, narrow, about twice as narrow as cilia; cilia dark grey-brown with bronzed sheen, ochreous anally.

Female genitalia (genital preparation Nos GA-255 and 1798 YA) (Fig. 7). Papilla analis broad, almost unsclerotized, covered with short setae; 8th tergite narrow, poorly sclerotized, without setae; lamella postvaginalis and antevaginalis undeveloped; posterior apophysis rather long, about as long as anterior apophysis; ostium bursae at middle of intersegmental membrane between segments 7 and 8, membranous; antrum short, slightly sclerotized medially; ductus seminalis narrow, long, with a well-sclerotized shell-shaped formation

distally; ductus bursae narrow, gradually broadened into corpus bursae; corpus bursae extremely small and narrow, without signum.

Male. See Arita & Gorbunov (1998).

Individual variability. Slightly varying in the number of yellow scales on the abdomen. Besides that, transparent areas of the forewing and number of scales on the hindwing are rather variable (Figs 1–4). Individual size varies as follows: alar expanse 15.0–19.5 mm; body length 8.5–11.6 mm; forewing 6.3–9.0 mm; antenna 4.5–5.3 mm.

Differential diagnosis. See Arita & Gorbunov (1998).

Bionomics. The host plant is unknown. Moths were collected in April–June at about 900–1,200 m a.s.l.

Habitat. Borders of evergreen broad-leaf forests.

Distribution. Known from N. Vietnam only.

Material examined. 1 ♂ (Fig. 1), N. Vietnam, Vinh Phu Prov., Tam Dao, 930 m, 2. V. 1996, T. Suzuki leg. (NSMT); 1 ♂, same locality, 1,230 m, 2. V. 1998, R. Matsumoto leg. (NSMT); 1 ♀, same locality, 1,230 m, 20. V. 1995, A. Saito leg. (NSMT); 1 ♀ (Fig. 4), same locality, 930 m, 4. V. 1996, B. Tanaka leg. (NSMT); 1 ♀, same locality, 930 m, 5. V. 1996, B. Tanaka leg. (genital preparation Nos GA-255 and 1798 YA) (NSMT); 1 ♀, same locality, 1,230 m, 1. VI. 1997, R. Matsumoto leg. (genital preparation Nos GA-243 and 1789 YA) (NSMT); 1 ♀ (Fig. 3), same locality, 1,230 m, 2. VI. 1997, R. Matsumoto leg. (NSMT); 1 ♀ (Fig. 2), N. Vietnam, Lao Cai Prov., Sa Pa, Ban Khoang, 1,400 m, 12–14. V. 1995, M. Owada leg. (NSMT).

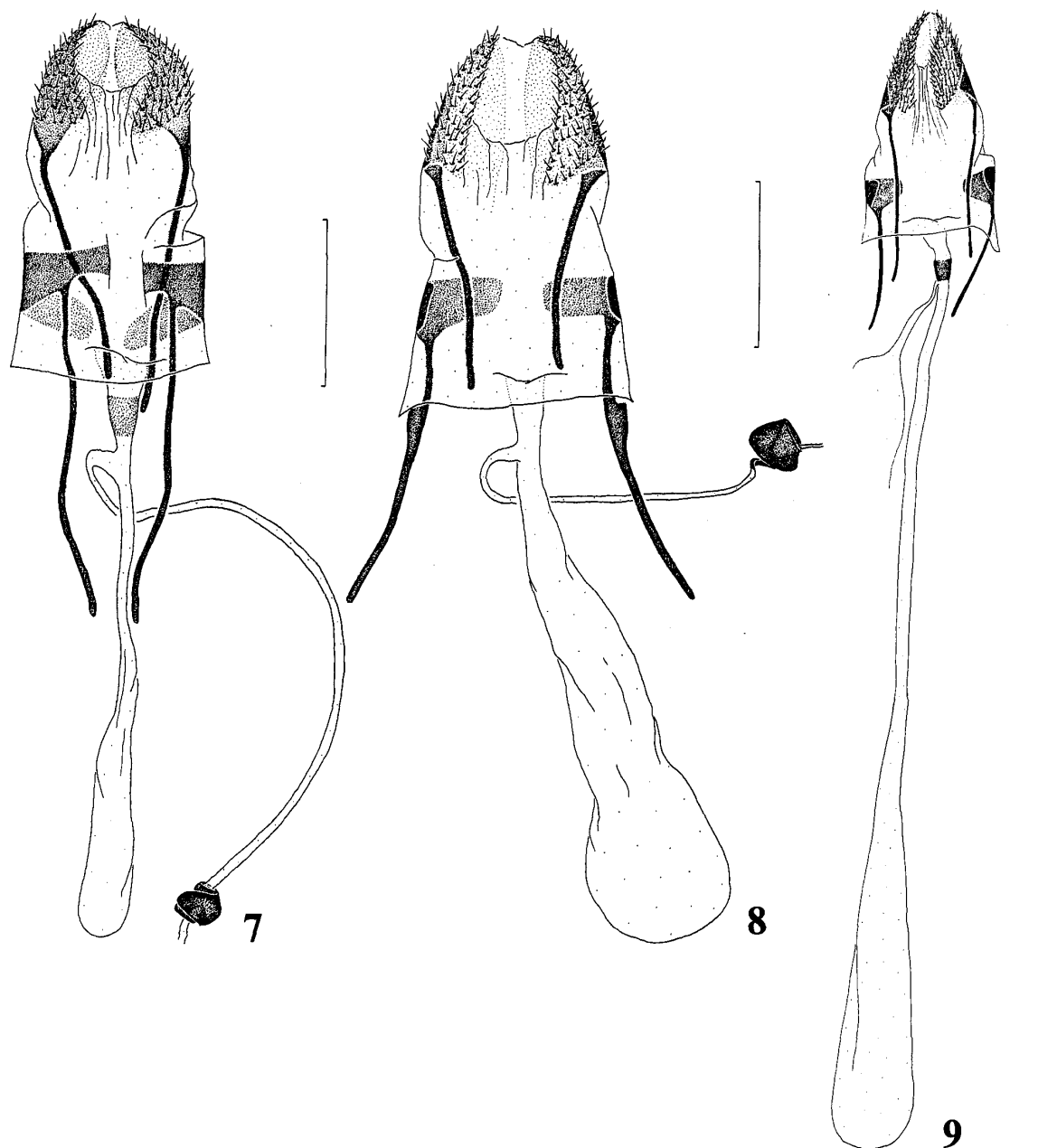
***Chamanthodon bicincta* sp. nov.** (Figs 5, 8)

Description. Female (holotype) (Fig. 5). Alar expanse 18.8 mm; body length 10.8 mm; forewing 8.5 mm; antenna 5.0 mm.

Head: antenna dark brown to black with dark violet-green sheen; scapus dark brown to black; frons dark brown with purple-bronzed sheen; labial palpus dark brown to black with green-purple sheen; vertex black with strong green-blue sheen; occipital fringe dark brown to black.

Thorax: dorsally entirely dark brown to black with strong greenish sheen, with a tuft of ochreous hair-like scales on metathorax laterally; thorax laterally dark brown to black with strong violet-blue sheen; posteriorly metepimeron and metameron dark brown with bronzed sheen.

Legs: neck plate dark brown to black with strong green-blue sheen; fore coxa ochreous with bronzed sheen in interior half and dark brown to black with green-blue sheen in exterior half; fore femur dark brown to black with green-blue sheen, with a few ochreous scales internally; fore tibia dark brown to black with green-bronzed sheen; fore tarsus dorsally dark brown with bronzed-purple sheen, ventrally brown with bronzed sheen; mid coxa dark brown to black with blue-violet sheen; mid femur ochreous with bronzed sheen, with a narrow dark brown to black anterior margin with bronzed sheen; mid tibia externally dark brown to black with bronzed-green sheen, with admixture of individual ochreous scales with bronzed sheen exterior-distally, internally dark brown with bronzed sheen; spurs ochreous with bronzed sheen; mid tarsus dorsally dark brown to black, two basal tarsomeres with purple-



Figs 7-9. Female genitalia of *Chamanthedon* spp. 7. *C. melanoptera* Le Cerf, 1927 (genital preparation Nos GA-255 and 1798 YA). 8. *C. bicincta* sp. nov., holotype (genital preparation No. GA-239). 9. *C. aurigera* (Bryk, 1947) (genital preparation Nos GA-244 and 1790 YA). Scale bars: 0.5 mm.

blue sheen, and remaining ones with bronzed-purple sheen, ventrally ochreous with bronzed sheen; hind coxa ochreous with admixture of dark brown scales with bronzed sheen; hind femur ochreous with bronzed sheen, with a narrow dark brown to black anterior margin with bronzed sheen; hind tibia externally dark brown to black with strong blue-green sheen, internally dark brown to black with strong purple; spurs ochreous with bronzed sheen; hind tarsus dorsally dark brown to black, two basal tarsomeres with strong green-blue sheen, and remaining ones with bronzed-purple sheen, ventrally ochreous with bronzed sheen.

Abdomen: dorsally dark brown to black with strong blue-violet sheen; tergite 4 with a

narrow ochreous to pale yellow stripe distally; tergite 6 with admixture of ochreous to pale yellow scales distally; ventrally sternite 1+2 with admixture of ochreous to pale yellow scales laterally; remaining sternites entirely dark brown to black with green-blue sheen; anal tuft entirely dark brown to black with blue-green sheen.

Forewing: costal margin dark brown to black with strong green-blue sheen; CuA-stem, anal margin, discal spot, veins within external transparent area dark brown to black with purple-violet sheen; apical area dark brown to black with bronzed-purple sheen; discal spot broad, broadened costally; transparent areas rather well-developed, densely covered with brownish semi-hyaline scales; external transparent area relatively small, quadrangular, divided into four cells; level to vein M_2 about 1.5 times as narrow as discal spot and about thrice as narrow as apical area; posterior transparent area reaching proximal margin of discal spot; cilia dark grey-brown with bronzed sheen.

Hindwing: transparent; veins and discal spot narrowly dark brown to black with bronzed sheen; discal spot narrow, cuneiform, reaching base of vein M_2 ; outer margin dark brown to black with bronzed-purple sheen, narrow from base of wing to vein CuA_1 and extremely broad from vein CuA_1 to costal margin; cilia dark grey-brown with bronzed sheen, ochreous anally.

Female genitalia (genital preparation No. GA-239) (Fig. 8). Papilla analis broad, almost unsclerotized, covered with short setae; 8th tergite narrow, poorly sclerotized, without setae; lamella postvaginalis and antevaginalis undeveloped; posterior apophysis rather short, about as short as anterior apophysis; ostium bursae at middle of intersegmental membrane between segments 7 and 8, membranous; antrum short, entirely membranous; ductus seminalis narrow, short, with a well-sclerotized shell-shaped formation distally; ductus bursae rather broad, gradually broadened into corpus bursae; corpus bursae without signum.

Male. Unknown.

Individual variability. Unknown.

Differential diagnosis. By the coloration of the abdomen, this new species seems to be closest to *C. albicincta* Hampson, 1919, but it can be easily separated by the coloration of the frons (white laterally in *albicincta*), labial palpus (mid joint white ventrally in the species compared), discal spot and apical area of the forewing (discal spot with yellow-orange scales distally; apical area between veins R_3 - M_3 densely mixed with yellow-orange scales in *albicincta*). Additionally, they are clearly distinguishable by the shape of the outer margin of the hindwing (extremely narrow in *albicincta*). From *C. hypochroma* Le Cerf, 1916 and *C. quinquecincta* (Hampson, 1893), this new species can be readily distinguished by the coloration of the abdomen (at least basal two tergites of the abdomen each with a broad yellow-orange stripe distally in these species compared), by the shape of the external transparent area of the forewing (versus broader, somewhat broader than discal spot in these species compared) and shape of the outer margin of the hindwing (extremely narrow in these species compared). From *C. melanoptera* Le Cerf, 1927, *C. bicincta* sp. nov. clearly differs by the coloration of various parts of the body, structure of wings and the female genitalia (*cp.* Fig. 5 with Figs 1-4, Fig. 8 with Fig. 7 and the description of the species compared above). From other congeners, this new species is easily distinguishable by the coloration of the abdomen and structure of the outer margin of the hindwing.

Bionomics. The host plant is unknown. The holotype was netted in mid-May at about 1,200 m a.s.l.

Habitat. The holotype was netted in a small glade inside an evergreen broad-leaf forest.

Distribution. Known from the type locality only in NE. Myanmar.

Material examined. Holotype ♀ (Fig. 5), N. Myanmar, 65 km NE. of Putao, Zi Var Dam, 1,250 m, 18–21. V. 1998, S. Murzin & V. Siniaev leg. (genital preparation No. GA-239) (COGM).

Etymology. The name of this new species is taken from Latin “*bis*” for twice and “*cinctus*” for a girdle or belt, and referring to the coloration of the abdomen of the species.

***Chamanthedon aurigera* (Bryk) (Figs 6, 9)**

Conopia aurigera Bryk, 1947: 108, pl. 1, fig. 5. Type locality: “N.O. Birma, Kambaiti” [= NE. Myanmar, Kambaiti, ca 25°25'N, 98°06'E]. Holotype ♀ (not ♂ !) (RMS).

Chamanthedon aurigera: Arita & Gorbunov, 1998: 20.

Description. Female (Fig. 6). Alar expanse 24.0 mm; body length 14.8 mm; forewing 11.1 mm; antenna 7.2 mm.

Head: antenna dark brown to black with dark green sheen, with a large pale yellow spot with light greenish hue in apical quarter; scapus dark grey-brown to black; frons dark grey-brown with purple-bronzed sheen, narrowly white laterally; two basal joints of labial palpus pale yellow with greenish hue ventrally and dark brown to black with green-purple sheen dorsally, apical joint entirely dark brown to black with green-purple sheen; vertex black with strong green sheen; occipital fringe pale yellow.

Thorax: patagia dark brown to black with strong green-bronzed sheen, with admixture of pale yellow scales with light greenish hue anteriorly and laterally; tegula dark brown to black with strong green-bronzed sheen, with pale yellow scales with greenish hue posteriorly; mesothorax dark brown to black with strong green-bronzed sheen; metathorax dark brown to black with strong green-bronzed sheen, densely mixed with pale yellow scales with greenish hue medially and with a tuft of ochreous hair-like scales laterally; thorax laterally dark brown to black with strong blue-violet sheen, with a large pale yellow spot with greenish hue medially; posteriorly metepimeron and metameron dark brown with green sheen, with admixture of pale yellow scales.

Legs: neck plate pale yellow with bronzed hue, with a few dark brown scales with purple-violet sheen medially; fore coxa entirely pale yellow with golden hue; fore femur externally entirely dark brown to black with purple-violet sheen, internally pale yellow in exterior half and dark brown in interior half; fore tibia dorsally dark brown to black with blue-violet sheen, with a few dark brown scales basally and distally, ventrally dirty yellow-orange; fore tarsus dorsally dark brown to black with purple-bronzed sheen, with a small pale yellow spot on four basal tarsomeres distally, ventrally ochreous with bronzed sheen; mid coxa pale yellow with golden hue, with admixture of dark brown scales with purple sheen; mid femur pale yellow with golden hue, broadly dark brown with purple-blue sheen anteriorly; mid tibia dark brown to black with strong green-blue sheen, with admixture of individual pale yellow scales exterior-medially and distally; spurs pale yellow with golden hue; mid tarsus dorsally dark brown to black with purple-bronzed sheen, with a small pale yellow spot on each tarsomere distally, ventrally ochreous with bronzed sheen; hind coxa dark brown to black with strong green-blue sheen; hind femur externally dark brown to black with strong green-blue sheen, internally pale yellow with golden hue; hind tibia externally dark brown

to black with strong green-violet sheen, with a few pale yellow scales with golden hue distally, internally pale yellow with golden hue, narrowly dark brown to black with blue-violet sheen distally; spurs pale yellow with golden sheen; hind two basal tarsomeres exterior-dorsally dark brown to black with strong green-violet sheen, with a small pale yellow to white spot with golden hue distally, remaining tarsomeres pale yellow to white with strong golden sheen, interior-ventrally entirely pale yellow to white with golden sheen.

Abdomen: dorsally dark brown to black with strong green-bronzed sheen; tergites 1 and 2 each with admixture of individual pale yellow scales with golden hue distally; tergite 4 with a broad, pale laterally broadened yellow stripe distally; tergites 5 and 6 each with a narrow, pale laterally broadened yellow stripe distally; ventrally sternite 1+2 pale yellow with dark brown to black distal margin with green-blue sheen; sternite 3 dark brown to black with bronzed-green sheen, densely mixed with pale yellow scales anterior-laterally; remaining sternites dark brown to black with green-blue sheen, with a broad pale yellow stripe distally; anal tuft dark brown to black with green-blue sheen, mixed with pale yellow scales with golden hue dorsally.

Forewing: basally black with green sheen; costal margin dark brown to black with strong green-blue sheen, with admixture of individual pale yellow scales between Sc and R-srem; CuA-stem, anal margin and veins within external transparent area dark brown to black with green-violet sheen; discal spot rather narrow, slightly broadened costally, dark brown to black with bronzed-purple sheen, with a broad, elongated, yellow-orange spot in distal part; apical area dark brown to black with purple sheen, densely covered with yellow-orange scales between veins; transparent areas well-developed; external transparent area relatively small, rounded distally, divided into five cells; level to vein M_2 about 2.5 times as broad as discal spot and about as broad as apical area; posterior transparent area slightly exceeding distal margin of discal spot; cilia dark grey-brown with bronzed sheen.

Hindwing: transparent; veins, discal spot and outer margin dark brown to black with bronzed-purple sheen; discal spot very small, cuneiform, reaching base of vein M_2 ; outer margin narrow, about twice as narrow as cilia; cilia dark grey-brown with bronzed sheen, pale yellow anally.

Female genitalia (genital preparation Nos GA-244 and 1790 YA) (Fig. 9). Papilla analis broad, slightly sclerotized basally, covered with short setae on membranous part; 8th tergite narrow, poorly sclerotized, without setae; lamella postvaginalis and antevaginalis undeveloped; posterior apophysis slightly longer than anterior apophysis; ostium bursae somewhat proximal to proximal margin of 8th sternite membrane; antrum short, slightly and narrowly sclerotized proximally; ductus seminalis narrow, short, without any sclerotized formation; ductus bursae narrow, long, gradually broadened into corpus bursae; corpus bursae without signum.

Male. Unknown.

Individual variability. The coloration is virtually constant, slightly variable only in individual size: alar expanse 21.0–24.0 mm; body length 12.0–14.8 mm; forewing 9.5–11.1 mm; antenna 6.5–7.2 mm.

Differential diagnosis. This species seems to be closest to *C. albicincta* Hampson, 1919, but can be separated from it by the somewhat larger size (alar expanse 16.0 mm in the holotype of the species compared) and by the coloration of the abdomen dorsally (tergites 4 and 6 each with a narrow white stripe distally in *albicincta*). From *C. hypochroma* Le Cerf, 1916, *C.*

quinquecincta (Hampson, 1893) and *C. melanopectera* Le Cerf, 1927, this species is readily distinguished by the coloration of the antenna (entirely dark brown to black in these species compared), frons (without white scales laterally in all these species compared), abdomen (with distinctly broader stripes in these species compared) and discal spot of the forewing (without bright coloured scales in these species compared). Besides that, from *C. melanopectera*, it differs by the structure of the male genitalia (*cp.* Fig. 9 with Fig. 7). From *C. flavipes* (Hampson, 1893) and *C. xanthopleura* Le Cerf, 1916, *C. aurigera* is distinguishable by the coloration of the antenna (entirely dark brown to black in these species compared), abdomen dorsally (without distinct stripes in these species compared), discal spot of the forewing (without bright coloured scales in these species compared) and by the shape of the external transparent area of the forewing (distinctly less developed in the species compared).

Bionomics. The host plant is unknown. Moths were collected in April and July. It is possible this species has two generations per a year.

Habitat. Borders of tropical rain forests.

Distribution. This species has been known from the type locality in Myanmar only. We record it from Vietnam and Thailand for the first time.

Material examined. 1 ♀ (Fig. 6), N. Vietnam, Ninh Binh Prov., Gia Vien, Cuc Phuong, 370 m, 27. IV. 1998, T. Hirowatari leg. (NSMT); 1 ♀, same locality, 160 m, 27. IV. 1996, Y. Arita leg. (genital preparation Nos GA-244 and 1790 YA) (NSMT); 1 ♀, same locality, 370 m, 25. IV. 1998, R. Matsumoto leg. (NSMT); 1 ♀, Thailand, Chiang Mai, Doi Suthep, 22. VII. 1981, H. Kuroku, S. Moriuti, Y. Arita & Y. Yoshiyasu leg. (NSMT).

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摘 要

ベトナムおよびその近隣地域の *Chamanthodon* 属 (鱗翅目, スカシバガ科) の知見 (有田 豊・Oleg G. Gorbunov)

スカシバガ科 *Chamanthodon* 属の *C. melanoptera* Le Cerf, 1927 と *C. aurigera* (Bryk, 1947) の2種をベトナムから記録した。*C. aurigera* はベトナムとタイから最初の記録である。*Chamanthodon* 属の雌は今まで未知であった。*C. bicincta* sp. nov. をミャンマーから記載した。

Chamanthodon melanoptera Le Cerf, 1927 (Figs 1-4, 7)

北ベトナムからホロタイプの1♂のみが知られていた。今回、北ベトナムのタムダオ (2♂ 6♀, 930-1,230 m) とサパ (1♀, 1,400 m) の2ヶ所から記録した。Figs 1-4 に見られるように、前後翅の色彩や腹部の黄色の帯には変異がある。

Chamanthodon bicincta sp. nov. (Figs 5, 8)

ミャンマーから新種として記載した本種は、腹部の色彩などが *C. albicincta* Hampson, 1919 に良く似ているが、頭部の色彩や前翅の横脈紋前縁部分の色彩が異なる。

Chamanthodon aurigera (Bryk, 1947) (Figs 6, 9)

この種は雌ゲニタリアが図示 (Fig. 9) したように他の2種類と大変異なる。Osminiini 族の他の属であるのは確かであるが、雄を調査するまでこの属に所属させておく。

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